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METHOD OF CRYSTALLIZING AMORPHOUS SILICON

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ABSTRACT

PURPOSE: To prevent crystallization of an amorphous silicon film twice even when the boundary section between two neighboring laser light irradiation regions is irradiated twice during the process of using laser light scanning irradiation to crystallize amorphous silicon films into polysilicon films.

CONSTITUTION: A silicon oxide film 3 is formed to a specified thickness t across the entire surface of an amorphous silicon film 2, a 2nd silicon oxide film 5 is pattern formed to a specified thickness t on top of the 1st silicon oxide film 3, this surface is scanned with laser light. Based on differences in the film thickness of the silicon oxide film, only the specific region of the amorphous film 2 which has a film thickness of $2t$ is crystallized and becomes a polysilicon film 6. Next, a 3rd silicon oxide film is formed in a thickness t across the entire surface, the surface is again irradiated with laser light, and based on differences in the film thickness of the silicon oxide film, only the remaining regions which have a film thickness of $2t$ are crystallized and become polycrystalline films.